

## ARTIFACT SHEET

Enter artifact number below. Artifact number is application number + artifact type code (see list below) + sequential letter (A, B, C ...). The first artifact folder for an artifact type receives the letter A, the second B, etc..  
Examples: 59123456PA, 59123456PB, 59123456ZA, 59123456ZB

095993951A

Indicate quantity of a single type of artifact received but not scanned. Create individual artifact folder/box and artifact number for each Artifact Type.

☐

CD(s) containing:

computer program listing

Doc Code: Computer

pages of specification

and/or sequence listing

and/or table

Doc Code: Artifact

content unspecified or combined

Doc Code: Artifact

☐

Artifact Type Code: P

☐

Artifact Type Code: S

☐

Artifact Type Code: U

☐

Stapled Set(s) Color Documents or B/W Photographs

Doc Code: Artifact    Artifact Type Code: C

☐

Microfilm(s)

Doc Code: Artifact    Artifact Type Code: F

☐

Video tape(s)

Doc Code: Artifact    Artifact Type Code: V

☐

Model(s)

Doc Code: Artifact    Artifact Type Code: M

☒

Bound Document(s)

Doc Code: Artifact    Artifact Type Code: B

☐

Confidential Information Disclosure Statement or Other Documents marked Proprietary, Trade Secrets, Subject to Protective Order, Material Submitted under MPEP 724.02, etc.

Doc Code: Artifact    Artifact Type Code X

☐

Other, description: \_\_\_\_\_

Doc Code: Artifact    Artifact Type Code: Z

The  
United  
States  
of  
America



The Commissioner of  
Patents and Trademarks

*Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.*

*Therefore, this*

United States Patent

*Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.*

*If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.*

*If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.*

*Bence Lehman*

Commissioner of Patents and Trademarks

*Ellie M. Person*  
Attest



US005771248A

## United States Patent [19]

Katayama et al.

[11] Patent Number: 5,771,248

[45] Date of Patent: Jun. 23, 1998

## [54] APPARATUS AND METHOD FOR ERROR CORRECTION

[75] Inventors: Yukari Katayama, Chigasaki; Shoichi Miyazawa, Yokohama; Hitoshi Ogawa, Kamakura; Masatoshi Nishina, Kanagawa-ken, all of Japan

[73] Assignee: Hitachi, Ltd., Tokyo, Japan

[21] Appl. No.: 516,927

[22] Filed: Aug. 18, 1995

## [30] Foreign Application Priority Data

Aug. 18, 1994 [JP] Japan ..... 6-194302

[51] Int. Cl.<sup>6</sup> ..... H03M 13/00

[52] U.S. Cl. .... 371/40.11; 371/37.1

[58] Field of Search ..... 371/37.1, 38.1, 371/40.1, 40.2, 40.3, 37.5, 41, 42, 47.1, 37.4, 37.2, 37.6; 360/47, 53

## [56] References Cited

## U.S. PATENT DOCUMENTS

5,257,270 10/1993 Hilden et al. .... 371/37.1

5,511,078 4/1996 Barucchi et al. .... 371/40.1  
5,586,127 12/1996 Moriuchi ..... 371/40.1  
5,598,422 1/1997 Longwell et al. .... 371/37.1

## FOREIGN PATENT DOCUMENTS

0 243 708 11/1987 European Pat. Off. .  
0 503 859 A2 9/1992 European Pat. Off. .  
0 503 859 A3 9/1992 European Pat. Off. .

Primary Examiner—Reba I. Elmore

Assistant Examiner—Thomas E. Brown

Attorney, Agent, or Firm—Antonelli, Terry, Stout, & Kraus, LLP

## [57]

## ABSTRACT

Apparatus for recording and/or reproducing user data recorded on a record medium. The apparatus includes record encoder for converting original user data into encoded user data of a predetermined record code and an error correcting code generator for generating original error correcting code data for correcting an error with respect to the encoded user data. A write unit records the encoded user data and the error correcting code on the record medium. A read unit reads the recorded data and the reproduced data is error corrected so as to provide the original user data.

8 Claims, 25 Drawing Sheets

